I. C. 7156 MARCH 1941

RECEIVED
MAY 7 1941
O. S. U. LIBRARY

UNITED STATES
DEPARTMENT OF THE INTERIOR
HAROLD L. ICKES, SECRETARY

BUREAU OF MINES
R. R. SAYERS DIRECTOR

INFORMATION CIRCULAR

A QUARTER CENTURY OF MECHANIZED MINING

NOTES ON PERMISSIBILITY

BY

L. C. ILSLEY

AFTER THIS REPORT HAS SERVED YOUR PURPOSE AND IF YOU HAVE NO FURTHER NEED FOR IT, PLEASE RETURN IT TO THE BUREAU OF MINES, USING THE OFFICIAL MAILING LABEL ON THE INSIDE OF THE BACK COVER.

Generated on 2024-09-19 09:48 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

I. C. 7156,
March 1941.

INFORMATION CIRCULAR

UNITED STATES DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

A QUARTER CENTURY OF MECHANIZED MINING

Notes on Permissibility[1]

By L. C. Ilsley[2]

Figure 1 is a reproduction of a chart recently prepared by the Bureau of Mines at its Pittsburgh Laboratory to show the Bureau's approval work in connection with electrically operated mining equipment. Nearly 27 years of approval work, covering 346 approved units, are shown on this chart. These approvals are arranged according to year of approval and the manufacturer to whom approval was granted. Forty-five manufacturers are represented, and a scheme of using various colored tabs permits the following subdivision of the equipment: Cutting machines, loading machines, conveyors, battery-operated locomotives, battery-operated power trucks, drills and drilling machines, rock-dusting machines, pumps, room hoists, air compressors, and miscellaneous.

The greatest number of approvals granted to a single manufacturer is 80; the next highest is 65, and the third is 49. Several manufacturers have been granted only a single approval. The chart shows all approvals granted for motored equipment. Some of these units have since become obsolete, and a few are used to a very limited extent if at all.

Figure 2 shows the relative percentage of approvals granted for each classification. Three groups (that is, cutting machines, loading machines, and conveyors) represent 65 percent of all machines approved. Those classifications having comparatively fewer approvals are in general more standardized, and fewer models serve the mining need.

Figure 3 shows the total approvals granted each year beginning with 1914. During the first 5-year period only four approvals were granted. These covered four different types of shortwall cutting machines, representing the product of three manufacturers. Taking the 5-year period ended with 1939 (the chart being incomplete for 1940), there were 118 approvals, an average of 23 per year. These 118 approvals covered 40 cutting machines, 28 loading machines, 30 conveyors, 5 storage-battery locomotives, 5 rock-dusting machines, 4 drills, 3 pumps, 2 air compressors, and 1 room hoist.

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from Bureau of Mines Information Circular 7156."

2/ Electrical engineer, Electrical-Mechanical Section, Mining Division, Bureau of Mines, Central Experiment Station, Pittsburgh, Pa.

Generated on 2024-09-19 09:38 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

It should be remembered that the chart does not begin to show the actual work involved in keeping the approval system up to date. Hundreds of changes are made in approved machines each year, all of which must be examined carefully and reported so that the necessary development in mechanized mining may proceed. Incidentally, a file of about 25,000 blue prints must be kept so that the Bureau may have on record details of the construction of all electrical accessories entering into the component parts of the approved units and have confidence in their safety as embodied therein.

During this 27-year period many changes have taken place in mechanized mining practice. In many instances shortwall cutting machines have been replaced with track-type machines. Shortwall cutting machines without reels have found a new field of activity in conveyor mining, in which it is the general practice to use a machine for each room.

A greater tonnage of coal is being loaded by mechanized means. Pit-car loaders, which were introduced in large numbers during 1929-30, were tried briefly but did not prove successful in meeting the loading problem of mechanized mining.

Conveyor loading is making rapid strides in many mining sections. The many changes in mining methods that have taken place have greatly increased the approval work, and of the making of new machines there seems to be no end. The introduction of complete mechanization means that fewer men are needed to produce the same tonnage. The use of approved equipment is essential to safeguard those men who are still required to carry on chiefly as manipulators of this equipment.

In this connection, it is believed that the use of storage-battery locomotives should be increased so that the hazards of trolley wires and trolley locomotives may be eliminated gradually.

Most of the coal-mining States use Bureau-approved equipment to some extent in gassy mines. Some States are more strict than others in their requirements. Whether or not Bureau-approved equipment shall be used in a given mine is a matter for State decision. The Federal Bureau of Mines does not have authority to insist upon the use of such equipment. However, the Bureau gladly assists any State in deciding as to its needs in this respect and the best methods of installation. Undoubtedly the greater the use of approved equipment in gassy mines, the fewer disasters there will be from electrical causes.

Generated on 2024-09-19 09:42 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

Generated on 2024-09-19 09:36 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

EQUIPMENT BEARING BUREAU OF MINES APPROVAL

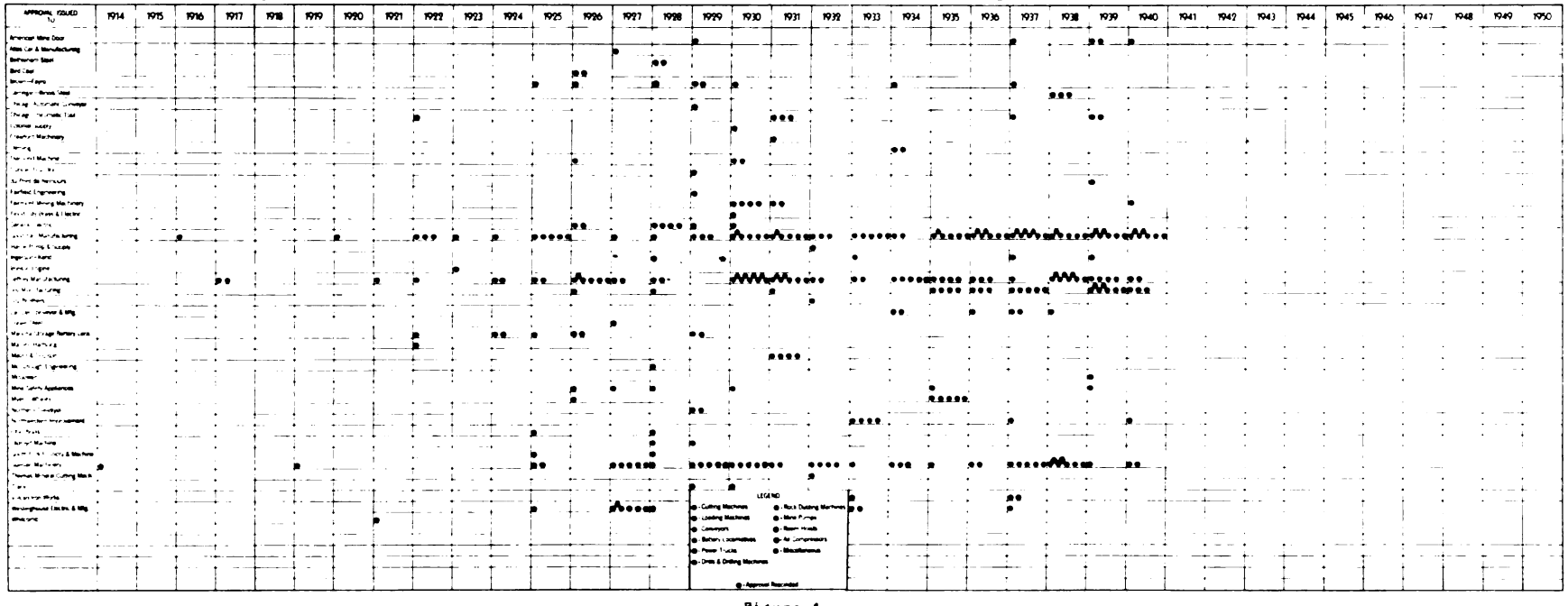

Figure 1.

Digitized by Google
Original from THE OHIO STATE UNIVERSITY

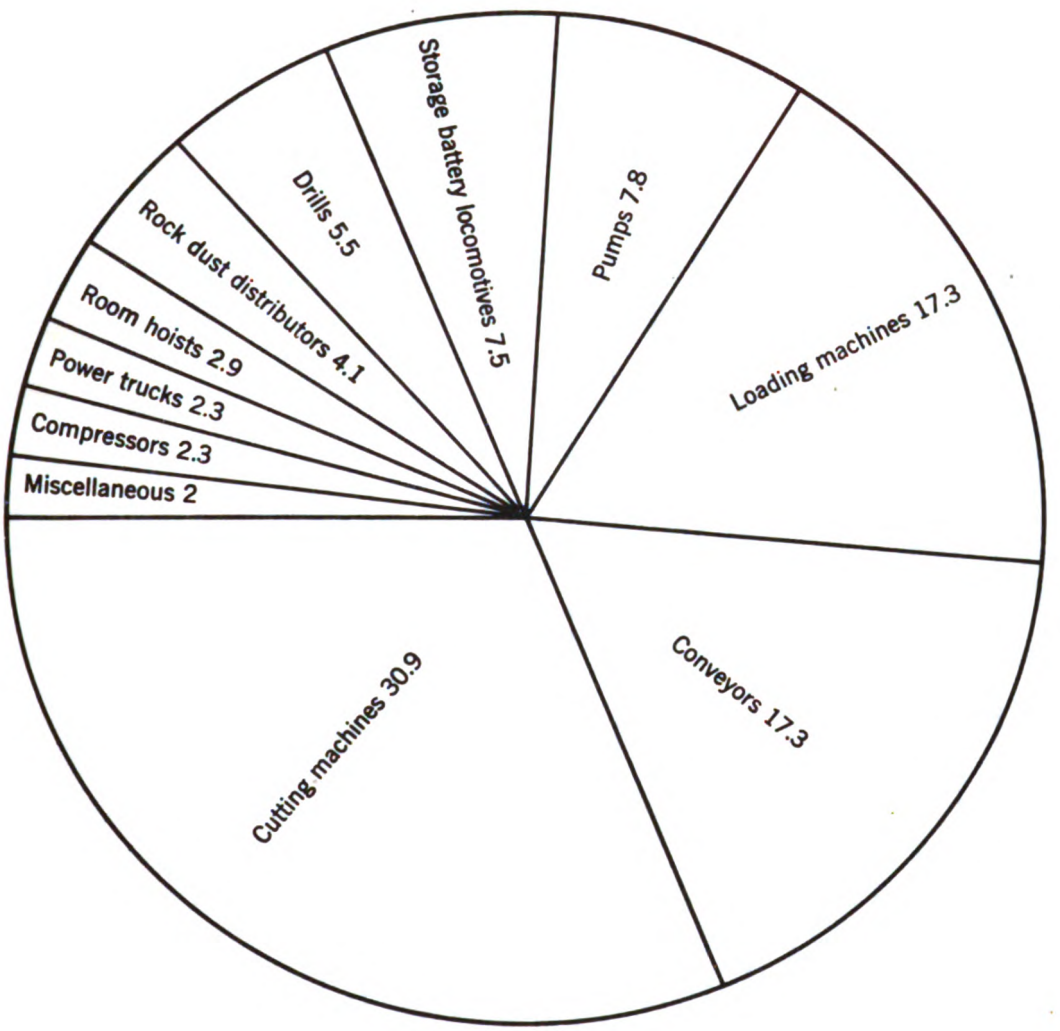

Figure 2.- Relative percentage of approvals for each classification.

Generated on 2024-09-19 09:37 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from THE OHIO STATE UNIVERSITY

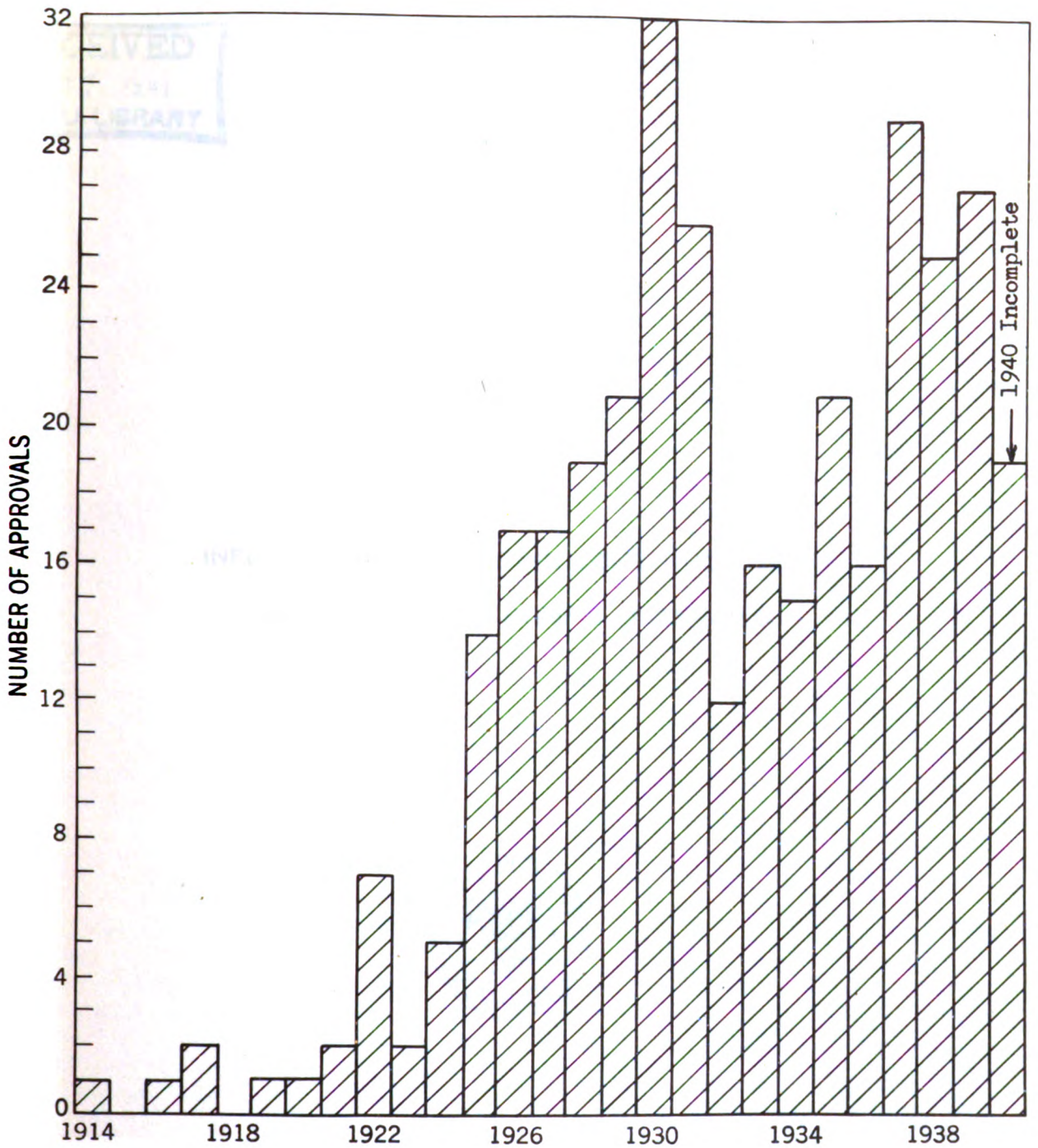

Figure 3.- Total number of approvals granted each year.

Generated on 2024-09-19 09:38 GMT / https://hdl.handle.net/2027/osu.32435030643944
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from
THE OHIO STATE UNIVERSITY